

PATENT ABSTRACTS OF JAPAN

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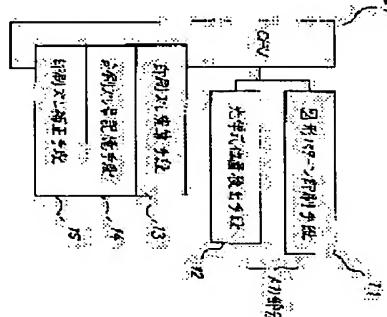
(21) Application number : 03-231836

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(54) SERIAL PRINTER

(57) Abstract:

PURPOSE: To correct shear in printing automatically without assistance in the case of test printing by a method wherein after printing is performed in a printing mode A and its positional detection is performed, printing is performed in a printing mode B and a positional data of a partner performing its positional detection is stored in a printing shear quantity memory means to correct both respectively.



CONSTITUTION: Printing operation is executed in a direction X in a printing mode A with a graphic pattern printing means 11, and a positional detecting operation is

executed with an optical position detecting means 12. Positional information A. is read in a micro-computer 21. Further, after executing paper feed operation, the

graphic pattern printing operation is executed in a direction Y, and positional information A. is read. Then, printing and detecting operation in a different printing mode B are executed in the same way, and the

positional information B. B. are read. Thereafter, values of (A. -B.), (B. -A.) are stored in a printing shear quantity memory means 14. In two way printing thereafter, correction of (A. -A.) content in the printing mode A and correction of (B. -B.) content in the printing mode B are respectively performed with a printing shear correcting

means 15.

LEGAL STATUS

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CLAIMS

[Claim(s)]

[Claim 1] The figure pattern printing means for printing one or more figure patterns in one line. The optical position detection means for scanning the form top after the aforementioned printing execution by the one way in the printing direction, and detecting each aforementioned figure pattern position. The printing gap operation means for performing a predetermined operation based on the detection value detected by the aforementioned optical position detection means. The amount storage means of printing gaps for performing the result of an operation obtained by the aforementioned printing gap operation means. In serial printer equipment equipped with the printing gap amendment means for usually using for the printing gap amendment in printing the value memorized by the aforementioned amount storage means of printing gaps. Printing the line which contains one or more figure patterns by the aforementioned figure pattern printing means at the time of test printing started by the predetermined method. After the aforementioned optical position detection means detects each figure pattern position, in quest of the amount of gaps in the printing section, it memorizes for the aforementioned amount storage means of printing gaps by the aforementioned printing gap operation means. Serial printer equipment characterized by usually performing good printing in printing, without carrying out adjustment by viewing, without giving the aforementioned printing gap amendment means in subsequent usual printings.

[Claim 2] printing gap of the spacing in bidirectional printing — an automatic amendment — the serial printer equipment according to claim 1 characterized by things.

[Claim 3] gap by the printing direction of each dot in a line — an automatic amendment — the serial printer equipment according to claim 1 or 2 characterized by things.

[Claim 4] Serial printer equipment characterized by performing a claim 1 and automatic amendment according to claim 2 or 3 in each printing mode in the serial printer equipment which has one or more printing modes.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001] [Industrial Application] this invention relates to serial printer equipment.

[0002] [Summary of the Invention] this invention, printing the line which contains one or more figure patterns by the figure pattern printing means in serial printer equipment at the time of test printing started by the predetermined method By memorizing for the amount storage means of printing gaps in quest of the amount of gaps in the printing section by the printing gap operation means, and giving the aforementioned printing gap amendment means in subsequent usual printings, after an engineering formula position detection means detects each figure pattern position it makes it possible to usually perform good printing in printing, without carrying out adjustment by viewing.

[0003] [Description of the Prior Art] What is depended on viewing was common, and even if the printing gap adjustment [in / conventional serial printer equipment] in bidirectional printing was equipped with the optical position detection means, it was common to have used the detection difference at the time of bidirectional printing of the predetermined position on the printing carriage section or a platen for amendment.

[0004] [Problem(s) to be Solved by the Invention] However, by adjustment by viewing, it was influenced by experience, feeling, etc. of an operator, the adjustment man day of adjustment precision was also great, and by the method of searching for the detection difference at the time of bidirectional printing of the predetermined position on the printing carriage section or a platen, since the detected body was not the printing section on the form which is a medium, the problem was in reliability.

[0005] Then, the place which this invention is for solving such a trouble, and is made into the purpose is for it to be exact and automatic at the time of test printing, and perform printing gap amendment at it, without minding people's hand.

[0006] [Means for Solving the Problem] The figure pattern printing means for the printer equipment of this invention printing one or more figure patterns in one line. The optical position detection means for scanning the form top after the aforementioned figure pattern printing means execution by the one way in the printing direction, and detecting each aforementioned figure pattern position. The printing gap operation means for performing a predetermined operation based on the detection value detected by the aforementioned optical position detection means. The amount storage means of printing gaps for memorizing the result of an operation obtained by the aforementioned printing gap operation means. In serial printer equipment equipped with the printing gap amendment means for usually using for the printing gap amendment in printing the value memorized by the aforementioned amount storage means of printing gaps Printing the line which contains one or more figure patterns by the aforementioned figure pattern printing means at the time of test printing started by the predetermined method After the aforementioned

optical position detection means detects each figure pattern position, in quest of the amount of gaps in the printing section, it memorizes for the aforementioned amount storage means of performing gaps by the aforementioned printing gap operation means. It is characterized by usually performing good printing in printing, without carrying out adjustment by viewing, without giving the aforementioned printing gap amendment means in subsequent usual printings. [0007] In addition, you may use for automatic amendment of printing gap of the spacing in bidirectional printing. Moreover, you may use for automatic amendment in the printing direction of each dot in a line of gap. Furthermore, you may use for automatic amendment with each printing mode in the serial printer equipment which has one or more printing modes.

[Function] According to the above-mentioned composition of this invention, it makes it possible to usually carry out good printing in printing, without carrying out adjustment by viewing.

[0009] [Example] Hereafter, this invention is explained in detail based on an example. [0010] Drawing 1 is one example which consists of a microcomputer 21 and a peripheral device. The microcomputer 21 shown here summarizes CPU, ROM, RAM, input/output port, an A/D converter, etc.

[0011] The figure pattern printing means 11 and the optical position detection means 12 are connected to the input/output port of a microcomputer 21. If a figure pattern printing demand signal is sent from a microcomputer 21 by this, printing operation will be performed in the direction of X in the printing mode A. Moreover, if an optical position detection demand signal is sent, it will scan in the specific direction and position detection operation will be performed, and detected positional information Aalpha is read into a microcomputer 21. Furthermore, figure pattern printing operation is performed in the direction of Y by print mode A after ejection operation execution, and position detection operation is performed in the specific direction. Detected positional information Abeta is read into a microcomputer 21. Next, printing and detection operation are similarly performed in different printing mode B, and detected positional information Balpha and Bbeta are read into a microcomputer 21. Moreover, the operation expression for a printing gap operation is set to the microcomputer 21 by ROM or RAM as a printing gap operation means 24. For example, if it is set as [A, B] alpha-[A, B] beta, the value of Aalpha-Bbeta and B alpha-A beta will be memorized by the amount storage means 14 of printing gaps in a microcomputer 21. Thereby, in subsequent bidirectional printings, as for the time of the printing mode A, the printing gap amendment means 15 amends a part for B alpha-B beta, respectively at the time of Aalpha-Abeta and the printing mode B at the time of printing of X or the direction of Y. The above-mentioned A, B, and X and Y are mutually different printing mode and the printing direction. Moreover, the above-mentioned operation expression [A, B] alpha-[A, B] beta is only a mere example. As mentioned above, it is an example of automatic amendment of printing gap of the spacing in bidirectional printing.

[0012] [Effect of the Invention] It becomes possible to usually carry out good printing in printing, without carrying out adjustment [according to / like / this invention] by viewing described above.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing which specifies the composition of this invention.

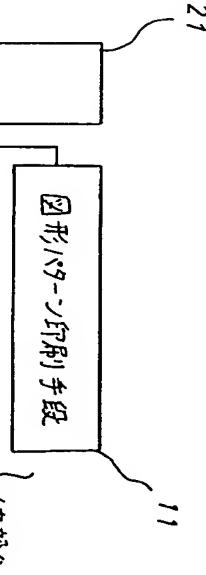
[Description of Notations]

- 11 Figure Pattern Printing Means
- 12 Optical Position Detection Means
- 13 Printing Gap Operation Means
- 14 The Amount Storage Means of Printing Gaps
- 15 Printing Gap Amendment Means

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クロコンピュータ2-1は、CPU, ROM, RAM, 入出力ポート、A/D変換器等を包括したものである。[0-1-1] 図形バーン印刷手段1-1および光学式位置検出手段1-2はマイクロコンピュータ2-1の入出力ポートに接続されている。これによりマイクロコンピュータ2-1から図形バーン印刷要求信号が送られると印字モードAでX方向に印刷動作を実行する。また、光学式位置検出手段が送られると特定方向に走査し位置検出手動作を実行し、検出された位置情報A_aがマイクロコンピュータ2-1に読み込まれる。さらに、紙送り動作を行後、印字モードAでY方向に図形バーン印刷動作を行なう。[0-1-2] これにより、印字モードBで同様に印刷、検出動作を実行し、検出された位置情報B_a, B_bがマイクロコンピュータ2-1に読み込まれる。またマイクロコンピュータ2-1では印刷ズレ演算手段2-4として印刷ズレ演算法のための演算式がROMまたはRAMに設定される。例えば、[A, B]_a - [A, B]_bにより設定しておけば、A_a-B_b, B_a-A_bの値がマイクロコンピュータ2-1にある印刷ズレ記憶手段1-4に記憶される。

[図1]



これにより、以降の双方向印刷においてXまたはY方向の印刷時に、印字モードAの時はA_a-A_b、印字モードBの時はB_a-B_b分の補正をそれぞれ印刷ズレ補正手段1-5により施す。前出のA, BおよびX, Yは互いに異なる印字モード、および印刷方向である。また、前出の演算式[A, B]_a - [A, B]_bは異なる一例に過ぎない。以上、双方向印刷における行間の印刷ズレの自動補正の一例である。

[0-0-1-1]

【発明の効果】 上述べたように本発明によれば、自規による調整をすることなく通常印刷において良好な印刷を行うことが可能となる。

【図面の簡単な説明】

【図1】 本発明の構成を明示する図。

【符号の説明】

1-1 図形バーン印刷手段
1-2 光学式位置検出手段
1-3 印刷ズレ演算手段
1-4 印刷ズレ記憶手段
1-5 印刷ズレ補正手段

置換手段1-2はマイクロコンピュータ2-1および光学式位置検出手段1-2はマイクロコンピュータ2-1の入出力ポートに接続されている。これによりマイクロコンピュータ2-1から図形バーン印刷要求信号が送られると印字モードAでX方向に印刷動作を実行する。また、光学式位置検出手段が送られると特定方向に走査し位置検出手動作を実行し、検出された位置情報A_aがマイクロコンピュータ2-1に読み込まれる。さらに、紙送り動作を行後、印字モードAでY方向に図形バーン印刷動作を行なう。[0-1-2] これにより、印字モードBで同様に印刷、検出動作を実行し、検出された位置情報B_a, B_bがマイクロコンピュータ2-1に読み込まれる。またマイクロコンピュータ2-1では印刷ズレ演算手段2-4として印刷ズレ演算法のための演算式がROMまたはRAMに設定される。例えば、[A, B]_a - [A, B]_bにより設定しておけば、A_a-B_b, B_a-A_bの値がマイクロコンピュータ2-1にある印刷ズレ記憶手段1-4に記憶される。

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[0-0-1-2]

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